

**REMARKS**

Please reconsider the application in view of the above amendments and the following remarks. Applicants thank the Examiner for carefully considering this application.

**Disposition of Claims**

Claims 1-28 are pending in this application. Claims 1, 10, 18, 26, 27, and 28 are independent. The remaining claims depend, directly or indirectly, from claims 1, 10, and 18.

**Rejection(s) under 35 U.S.C § 112**

Claims 7-8 and 15-16 stand rejected under 35 U.S.C. § 112 as indefinite. Claims 7 and 8 have been amended in this reply to clarify the present invention recited. In particular, the “cylindrical” limitation has been removed from these claims, and from any other claims containing this limitation. Although this limitation had been intended to describe the *type* of cutting element, and not necessarily to limit its shape, the language has been removed in order to resolve any ambiguity. Accordingly, withdrawal of this rejection is respectfully requested.

**Rejection(s) under 35 U.S.C § 102**

Claims 1, 5-8, and 13-16 stand rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,302,223, issued to Sinor (“Sinor”). Claims 1 and 10 have been amended in this reply to clarify the present invention recited. Claims 5-8 and

13-16 depend from claims 1 and 10, respectively. To the extent that this rejection may still apply to the amended claims, the rejection is respectfully traversed.

Claims 1 and 10, as amended, now include the limitation that the polycrystalline diamond layer has a thickness of between 0.140 inches and 0.240 inches. As is well-known in the art, certain drilling applications will require a particular diamond volume in a drill bit. Previously, the use of thicker diamond tables on larger cutting elements was impracticable due to the high shear stresses generated in such configurations. Such shear stresses typically limited the thickness of the diamond table (paragraph 6 of the application as filed). Applicants have discovered that combining a thicker diamond table with a non-planar interface advantageously increases a cutter's resistance to both shear and brittle failure from the increased stresses generated by the use of the thicker diamond table.

As noted by the Examiner, Sinor neither discloses nor suggests a diamond table having the claimed thickness. Because Sinor fails to disclose a limitation of the claims, Sinor cannot anticipate the claims. Therefore, the Applicants request that the § 102 rejection be withdrawn.

### **Rejection(s) under 35 U.S.C § 103**

Claims 1-2, 5-8, and 13-16 stand rejected under 35 U.S.C. § 103 as obvious over Sinor. Claims 1 and 10 have been amended in this reply to clarify the present invention recited. Claims 2, 5-8, and 13-16 depend from claims 1 and 10, respectively. To the extent that this rejection may still apply to the amended claims, the rejection is respectfully traversed.

As previously discussed, claims 1 and 10 have been amended to include the limitation that the polycrystalline diamond layer has a thickness of between 0.140 inches and 0.240 inches. The criticality of this feature is demonstrated both in the specification and claims. Sinor neither discloses nor suggests a combination of larger size cutter with an increased diamond table thickness, as claimed herein.

Moreover, As demonstrated above, and by inclusion in the claims, the thickness of the diamond table is a critical element of certain embodiments of the invention. By proceeding contrary to the prior art, which avoided larger diamond tables due to increased failure rates - particularly in larger cutters, Applicants have demonstrated the non-obviousness of the instant claims (see e.g., *In re Hedges*, 783 F.2d 1038 (Fed. Cir. 1986). Applicants note that the Examiner cites *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775 (Fed. Cir. 1985) in support of the argument for a *prima fascia* case of obviousness "when claimed ranges and prior art ranges... are close enough that *one skilled in the art would have expected them to have the same properties*" (emphasis added). The instant situation is distinguishable over that of *Titanium Metals*. In the instant application, those skilled in the art know and have known of the increased failure rate with thicker diamond tables. Accordingly, diamond tables exceeding the prior art thicknesses were not commonly used, particularly on larger cutters which are often exposed to higher stresses. However, Applicants have realized an unexpected result in the combination of thicker diamond tables with non-planar interfaces – resulting in a cutter that has an advantageously greater diamond volume, while mitigating the effects of increased stress on cutter failure.

Furthermore, *Titanium Metals* was distinguished by the courts in a number of

cases. For instance, in *Akzo N.V. v. U.S. Intern. Trade Com'n*, 808 F.2d 1471 (C.A.Fed. 1986), the court held that *Titanium Metals* did not apply because it had relied on a single reference that disclosed a range of alloys which *included the claimed ranges*, whereas in *Akzo* no prior art reference disclosed the claimed process. This is analogous to the fact that the Examiner has provided no art, and the Applicants are aware of none, that discloses the particular diamond table thicknesses claimed herein, much less the combination of those thicknesses with a larger size cutter.

In view of the above, Sinor fails to show or suggest the present invention as recited in the claims as amended. Thus, the claims as amended are patentable over Sinor. Dependent claims are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 3-4, 9-12, and 17-28 stand rejected under 35 U.S.C. § 103 as obvious over Sinor. Claims 1, 10, 18, and 26-28 have been amended in this reply to clarify the present invention recited. Claims 3, 11, and 19 have been cancelled, rendering their rejection moot. Claims 4, 9, 12, and 17, and 20-25 depend from claims 1, 10, and 18, respectively. To the extent that this rejection may still apply to the amended claims, the rejection is respectfully traversed.

As previously discussed, Sinor fails to disclose the claimed range of cutter size. Sinor also fails to disclose the claimed range of diamond table thickness. The criticality of the increased diamond table thickness is demonstrated at least in paragraph 6 of the specification as filed. Thus, the claims as amended are patentable over Sinor. Dependent

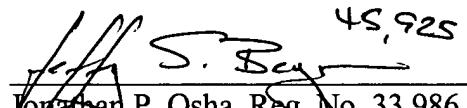
claims are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

## CONCLUSION

Applicants believe this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 05516.088001).

Respectfully submitted,

Date: 1/23/04

  
45,925  
Jonathan P. Osha, Reg. No. 33,986  
ROSENTHAL & OSHA L.L.P.  
1221 McKinney, Suite 2800  
Houston, Texas 77010  
Telephone: (713) 228-8600  
Facsimile: (713) 228-8778

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